

WE CLAIM:

1. A direct and non-destructive method for measuring recess depth in a semiconductor wafer through use of a solvent, comprising:

- 5 a) placing a recessed wafer into a track;
- b) pouring a solvent into the wafer;
- c) commencement of spinning the track-wafer-solvent to recess said solvent into the wafer trench solvent;
- 10 d) subjecting the track-wafer-solvent from step c) to a subsequent spinning step to spin-off any remaining solvent on the surface of said wafer to leave the wafer trench filled with solvent;
- e) weighing the solvent-filled-trench wafer;
- 15 f) subjecting the solvent-filled-trench wafer to heating to remove said solvent; and
- g) weighing the solvent-free wafer to determine the difference in weight, and using the density of the solvent together with the difference in weight to
- 20 determine the recess depth.

2. The method of claim 1 wherein said solvent is an organic solvent.

3. The method of claim 2 wherein said solvent is
25 characterized by a density of about 1.4g/cm^3 .

4. The method of claim 3 wherein said semiconductor device dimension is $0.13\mu\text{m}$ or less.

5. The method of claim 1 wherein said semiconductor device is a 110nm DRAM product characterized by 308 chips per 8 inches
30 of wafer, and a half billion trenches per chip.

6. The method of claim 5 wherein each trench has a width of 125nm , a length of 220nm and a depth of $1.3\mu\text{m}$.

7. The method of claim 6 wherein the total volume of trench filled-up with said solvent is about 4.3mm^3 .

8. The method of claim 7 wherein said weight difference is about 6mg.

5 9. The method of claim 1 wherein said recess is a polysilicon recess.

10. The method of claim 9 wherein said polysilicon recess results from an ASG or a LOCOS process.